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Non-Fluctuational Signature of the QCD Critical Point

We study the influence of the QCD critical point on the trajectories describing the evolution of the expanding fireball in heavy-ion collisions. We find that the lines of constant specific entropy (entropy per baryon) on the phase diagram are drawn towards a special point on the coexistence (first-order) line where the specific entropy reaches a maximum [1]. We study the interplay between this feature of the isentropic trajectories and the freezeout curve. If the critical point is located near the freezeout curve, a region inaccessible by isentropic expansion appears on the freezeout curve. This behavior of the isentropes could provide a novel, non-fluctuational signature of the critical point requiring significantly lower statistics than the fluctuational signatures.

[1] Maneesha Sushama Pradeep, Noriyuki Sogabe, Mikhail Stephanov, and Ho-Ung Yee, *Phys. Rev. C* **109**, 064905 (2024).

Category

Theory

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Primary authors: SUSHAMA PRADEEP, Maneesha (University of Maryland); SOGABE, Noriyuki (University of Illinois Chicago); STEPHANOV, Misha (University of Illinois Chicago); YEE, Ho-Ung (University of Illinois Chicago)

Presenter: SOGABE, Noriyuki (University of Illinois Chicago)

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